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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,640	09/29/2004	Basanth Jagannathan	FIS920040085	5639

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EXAMINER	
NGUYEN, TRAM HOANG	
ART UNIT	**PAPER NUMBER**
2818	

NOTIFICATION DATE	DELIVERY MODE
10/18/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/711,640	JAGANNATHAN ET AL.	
	Examiner	Art Unit	
	Tram H. Nguyen	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-20 and 31-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-20 and 31-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In response to the communications dated 08/03/2007, claim 44 has been added. Therefore, claims 14-20,31-44 are pending in this application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14-17, 31-34,36,40-44 are rejected under 35 U. S. C. § 102 (b) as being anticipated by Hoffinger et al. (US 5,635,753; hereinafter Hoffinger).

Regarding **claim 14**, Hoffinger discloses a semiconductor device (fig. 6) comprising: a substrate (reference numeral 1); a source (10) and a drain (11) arranged within the substrate (reference numeral 1); gate (7) formed on the substrate (1) between the source and drain (10 and 11); and substrate contact (sinker 6) formed within the substrate (1) in electrical contract with the source (10), the substrate contact (sinker 6) being arranged adjacent to a side (refer to the top surface of 10) of the source (10) without an intervening shallow trench isolation structure (see fig. 6).

Hoffinger does not explicitly state "little or no current flows though the substrate contact". However, Applicant should note that if the device is "off", no current would flow

through the substrate contact. And in the case that when the device is at "on", somewhat current would flow through the substrate contact to substrate contact.

Regarding **claim 15**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. The recitation "configured to shield the semiconductor device from electrical noise", it refers to an operational limitation and any such limitation must distinguish from the prior art in terms of structure rather than function, In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also In re Swinehart, 439 F.2d210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971; In re Danly, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Regarding **claim 16**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, Fig. 6 of Hoffinger shows the substrate contact (sinker 6) being in direct physical contact with the source (10) of the semiconductor device (7).

Regarding **claim 17**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. In addition, Hoffinger also teaches the substrate contact (sinker 6) comprises a p+ region (col. 3, line 63).

Regarding **claim 31**, Hoffinger discloses all the limitation of the claimed invention for the same reasons as set-forth above. Besides, fig. 6 of Hoffinger shows the substrate contact (6) almost completely encircles an active region (2).

Regarding **claim 32**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, Fig. 6 of Hoffinger shows the semiconductor device comprises an FET prime cell (see fig. 6).

Regarding **claim 33**, Hoffinger discloses a semiconductor device (fig. 6) comprising: a substrate (reference numeral 1); a source (reference numeral 10) and a drain (reference numeral 11) arranged within the substrate (reference numeral 1); a gate (7) formed on the substrate (1) between the source and the drain (10 and11); and a ring substrate contact (fig. 6 shows sinker 6 looping around incompletely like a ring shape) formed within the substrate (1) in electrical contract with the source (10); wherein one of the ring substrate contact (6) abuts a side (refer to the top surface of 10) of the source area (10) is arranged adjacent to the side (refer to top surface) of the source (10) without an intervening shallow trench isolation structure (see fig. 6).

Regarding **claim 34**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. The recitation "the ring substrate contact being configured to shield the semiconductor device from electrical noise", it refers to an operational limitation and any such limitation must distinguish from the prior art in terms of structure rather than function, In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also In re Swinehart, 439 Fo2d210, 212-13, 169 USPQ 226,228-29 (CCPA 1971; In re Danly, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Regarding **claim 36**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. In addition, Hoffinger also teaches the substrate contact (sinker 6) comprises a p+ region (col.3, line 63).

Regarding **claim 40**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, fig. 6 of Hoffinger teaches the semiconductor device comprises an FET prime cell (see fig. 6).

Regarding **claim 41**, Hoffinger discloses all the limitation of the claimed invention for the same reasons as set-forth above. Besides, fig. 6 of Hoffinger shows the substrate contact (sinker 6) almost completely encircles an active region (2).

Regarding **claim 42**, Hoffinger discloses a semiconductor device (fig. 6) comprising: a substrate (reference numeral 1); a source (reference numeral 10) and a drain (reference numeral 11) arranged within the substrate (reference numeral 1); a gate (7) formed on the substrate (1) between the source and the drain (10 and 11); and a ring substrate contact (fig. 6 shows sinker 6 looping around incompletely like a ring shape) formed within the substrate (1) in electrical contact with the source (10), the substrate contact (sinker 6) almost completely encircles an active region (2).

Regarding **claim 43**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, Fig. 6 of Hoffinger shows the semiconductor device comprises an FET prime cell (see fig. 6).

Regarding **claim 44**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above. Besides, Fig. 6 of Hoffinger shows the substrate contact (sinker 6) abuts the side (refer to top surface of 10) of the source (10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen as applied to claim 14 above, and further in view of Herzum et al. (US 2004/0238871; hereinafter Herzum).

Regarding **claim 20**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above; except for the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact. However, Herzum has a similar structure wherein fig. 3 shows the substrate contact (reference numeral 12) comprises a p-type doped silicon tab contacting source (reference numeral 14) and a silicide layer (reference numeral 52) on

a top of the substrate contact (reference numeral 12). Therefore, it would have been obvious to one having ordinary skill in the art at the same time the invention was made to include the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact as taught by Herzum in device of Hoffinger so that it reduces the resistance.

Claims 35,39 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen as applied to claim 33 above, and further in view of Herzum et al. (US 2004/0238871; hereinafter Herzum).

Regarding **claim 35**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above except for the substrate contact being in direct physical contact with the source of the semiconductor device. However, Herzum has a similar structure (fig. 1A) wherein the substrate contact (12) being in direct physical contact with the source of the semiconductor device (14). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device structure as such the substrate contact being in direct physical contact with the source of the semiconductor device as taught by Herzum in the semiconductor device structure as disclosed by Hoffinger so that it reduces the length of the device structure.

Regarding **claim 39**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above; except for the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the

substrate contact. However, Fig. 3of Herzum has a similar structure wherein the substrate contact (reference numeral 12) comprises a p-type doped silicon tab contacting source (reference numeral 14) and a silicide layer (reference numeral 52) on a top of the substrate contact (reference numeral 12). Therefore, it would have been obvious to one having ordinary skill in the art at the same time the invention was made to have the substrate contact comprises a p-type doped silicon tab contacting source and silicide layer on a top of the substrate contact as taught by Herzum in the semiconductor device structure as disclosed by Hoffinger so that it reduces the length of the device structure.

Claims 18,19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen as applied to claim 14 above, and further in view of Rice et al. (US 4,738,936; hereinafter Rice).

Regarding **claim 18**, Hoffinger discloses all the limitations of the claimed invention for the same reasons as set-forth above except for the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger. However, Rice has a similar structure (fig. 1H) (Note: the current flows through the substrate contact (described in col. 4, lines 36-38) wherein the source comprises a source finger and the substrate contact (20) abuts all one side of the source finger (60) (col. 4, line 19). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger as taught by Rice in the device of Hoffinger in order to reduce expensive packaging

techniques, further reduce output capacitance, and to reduce or eliminate junction capacitance (see Rice: col.1, lines 56-59).

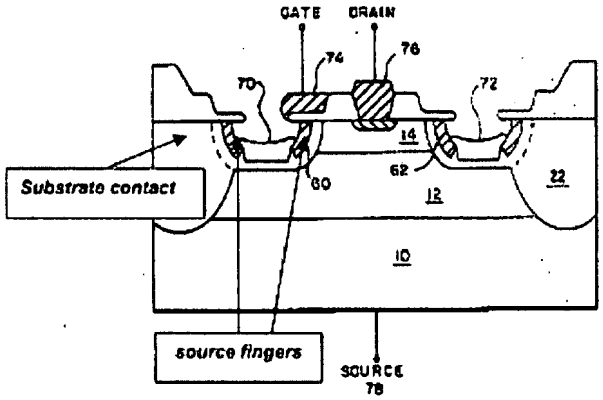

FIG.—1H

Regarding **claim 19**, Hoffinger and Rice disclose all the limitations of the claimed invention for the same reasons as set-forth above; likewise, Rice also teaches two source fingers arranged within substrate, wherein the substrate contact abuts two of the two source fingers (refer the above fig. 1H or Rice).

Claims 37,38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffinger as applied to claim 33 above, and further in view of Rice et al. (US 4,738,936; hereinafter Rice).

Regarding **claim 37**, Hoffinger discloses all the limitation of the claimed invention for the same reasons as set-forth above except for the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger. However, Rice has a similar structure (fig. 1H) (Note: the current flows through the ring substrate contact (described in col. 4, lines 36-38)) wherein the source comprises a source finger and the ring substrate contact (reference numeral 20) abuts all of one side

of the source finger (reference numeral 60) (col. 4, line 19). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have the source comprises a source finger and the substrate contact abuts substantially all of one side of the source finger as taught by Rice in the device of Hoffinger in order to reduce expensive packaging techniques, further reduce output capacitance, and to reduce or eliminate junction capacitance (see Rice: col.1, lines 56-59).

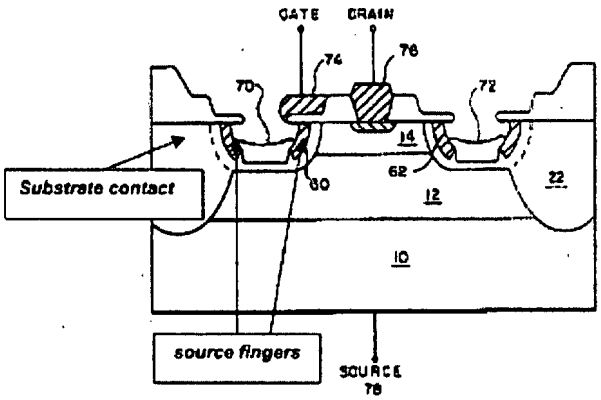

FIG.-1H

Regarding **claim 38**, Hoffinger and Rice disclose all the limitations of the claimed invention for the same reasons are set-forth above; likewise, Rice also teaches two source fingers arranged within substrate, wherein the substrate contact abuts two of the two source fingers (refer the above fig. 1H of Rice).

Conclusion

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tram Hoang Nguyen whose telephone number is (571)272-5526. The examiner can normally be reached on Monday-Friday, 8:30 AM – 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (571)272-1657. The fax numbers for all communication(s) is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.

THN
Art Unit 2818
10/11/2007

STEVEN LOKE
SUPERVISORY PATENT EXAMINER